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MOUNTAIN GOAT

MONTANA FISH, WILDLIFE & PARKS
HUNTING SEASON / QUOTA CHANGE SUPPORTING INFORMATION

Species: Mountain Goat
Region: 4
Hunting District: 460
Year: 2020

1. **Describe the proposed season / quotas changes and provide a summary of prior history (i.e., prior history of permits, season types, etc.). REMEMBER THIS STEP IS TO BE ACCOMPLISHED BY THE INITIAL ENTRY INTO THE DATABASE—SO FOLKS CAN START THIS NARRATIVE WITH #2 BELOW.**

2. **What is the objective of this proposed change? This could be a specific harvest amount or resulting population level or number of game damage complaints, etc.**

It is proposed to close the Hunting District (HD) 460 mountain goat season for 2020, to remain closed until populations rebound to huntable levels. The objective of this proposed change is to reduce the potential for further population declines due to harvest and promote population growth. The mountain goat population in this HD east of Great Falls extends throughout the Highwood Mountains, an isolated mountain range of USFS lands surrounded by private land mountain foothill habitats. This goat population expanded to the Highwoods from neighboring Square and Round Buttes (HD 447) in the late 1980's and early 1990's. Movement from Square and Round Buttes to and from the Highwoods occurs, but not nearly like in the late 1990's and early 2000's when goat numbers were at all-time highs on Square Butte. The population objective for mountain goats in the Highwood Mountains is to maintain 70 observed goats (± 20%) with good distribution throughout the mountain range.

3. **How will the success of this proposal be measured? This could be annual game or harvest surveys, game damage complaints, etc.**

The success of this proposal will primarily be measured by observed increases in overall numbers of mountain goats (to include improved production/recruitment) during survey efforts. Another measure of success also includes expanded or improved mountain goat distribution within this area with respect to historical observations. The mountain goat population in the District has been declining since 2010 due to several reasons including but not limited to poor kid production and recruitment, hunter harvest of adult nannies, unaccounted for harvest from supertag and auctions license(s), conifer encroachment in safety corridors and ridge tops, predation (especially via exploding lion population), and late winter early spring large scale snow events.

Table 1. Mountain goat survey trends on Square & Round Buttes, Highwoods, 1990-Present.

	Square Butte HD 447			Round Butte HD 447			Highwoods HD 460		
Year	**Adults**	**Kids**	**Total**	**Adults**	**Kids**	**Total**	**Adults**	**Kids**	**Total**
1990	36	16	52	No	survey		No	survey	
1991	No	survey		No	survey		No	survey	
1992	-	-	74	-	-	5	No	survey	
1993	56	23	79	4	1	5	No	survey	
1994	51	18	69	9	3	12	9	5	14
1995	52	15	67	9	6	15	15	6	21
1996	56	17	73	6	4	10	25	8	33
1997	35	21	56	9	6	15	30	12	42
1998	38	16	54	3	2	5	26	6	32
1999	36	23	59	10	7	17	28	17	45
2000	48	15	63	7	3	12	No	survey	

2001*	26	5	31	21	6	27	47	14	61
2002	30	11	41	21	10	31	44	13	57
2003a**	36	28	64	17	13	30	39	14	53
2003b	48	27	75	20	12	32	No	survey	
2004	46	21	67	26	10	36	39	10	49
2005	36	11	47	32	13	45	51	21	72
2006	24	8	32	24	15	39	31	12	43
2007	21	6	27	23	8	31	52	16	68
2008	19	7	26	23	12	35	45	17	62
2009	No	Survey		No	Survey		No	Survey	
2010	19	4	23	25	8	33	63	16	79
2011	No	Survey		No	Survey		No	Survey	
2012	22	8	30	25	7	32	44	6	50
2013	2	1	3	26	6	32	38	5	43
2014	24	5	29			30	21	4	26
2015	10	3	13			31(4/2015)	37	3	40
2016	14	4	18	26	8	34	13	4	17
2017	No	Survey				38	No	Survey	
2018	15	2	17	34	10	44	10	3	13
2019									

*March 2001, 77 goats counted on square butte during elk survey.
**April 2003, 64 goats counted on square butte and 27 goats counted on round butte during incidental survey by CL and GT.
***April 2006, 47 goats counted on square Butte and 40 goats counted on Round Butte (GT surveyor)

4. **What is the current population's status in relation to the management objectives? (i.e., state management objectives from management plan if applicable; provide current and prior years of population survey, harvest, or other pertinent information).**

Mountain goat HD 460 was created for the Highwoods goat population in 1998, with two licenses offered. The goat population in the Highwoods has remained relatively stable through the 2000's. From 1998 to 2001, two either sex licenses were issued annually. As the population expanded to 60 animals in 2001, license numbers increased to five annually from 2002-2005. During 2005, late summer/early fall surveys, 72 goats were observed in HD 460 indicating the continued growth and expansion of the Highwoods goat population. In 2006, licenses were again increased from 5 to 7 following goat population trends (Tables 1 and 2). In the late 2000's, goat numbers were slightly lower than highs of 2006-07, thus licenses were reduced from 7 to 4. Survey results from fall 2010 revealed an all-time high number of goats thus an increase in licenses to 6 from 2011 to 2013. During the 2013 season, two (2) additional billies were harvested from the HD, the Montana goat "supertag" and the mountain goat auction license. This additional harvest boosted the total harvest to 8 (6 billies, 2 nannies) during the 2013 season. Additional harvest through the auction and supertag is not consistent from year to year but can have an adverse effect on the population harvesting "extra" goats during one given year and cannot be accounted for when setting quotas. As goat numbers started to show declines in 2013, licenses were reduced to 4 for the 2014 season. During the 2014 and 2015 seasons, 8 total goats were harvested, half consisting of adult nannies. In 2016, licenses were reduced from 4 to 2 and further reduced in 2017 to 1 license as populations continued to decline. The past 14 years (2005-2018), 66 goats have been harvested in the Highwoods (42 Billies / 14 Nannies), a 21% nanny harvest. Historically, the number of licenses offered in goat HD's 447 and 460 was approximately 10% of the observed population, if and when, production and recruitment was good during the same period. This non-native herd had historically very good production and recruitment compared to native goat herds in Montana, which is typical of most non-native herds. That has not been the case the last 10 years (Tables 1 and 2).

Female goats typically do not breed until they are at least 3-4 years old and may not have a kid every year. Primary productive ages are 4-10 years of age with senescence occurring around 10 years of age. With the 21% female harvest, lack of kid production and recruitment, lower population levels, the number of licenses

were reduced to follow population trends. Kid production and recruitment has also been poor in both HD's 460 and 447. Since 2010, surveys revealed less than 30 kids: 100 adults (Table 2). During 2015, late summer/early fall aerial survey efforts, along with ground (foot/horse) surveys and hunter contacts, total observed numbers revealed 40 goats (37 adults, 3 kids).This survey showed further decline in overall numbers and kid recruitment from the high of 79 goats observed in 2010 (Tables 2 and 3). Total observed number of goats during aerial surveys late summer/early fall 2016 revealed only 17 goats and 13 goats during 2018 surveys. Based on various research data, an approximate observability rate of 60% (aerial helicopter survey) may be a realistic number to be used to help gauge population size for this HD. Simply put, a potential target minimum observation of 35-40 individual adult goats (non-kid/yearlings) could be recommended during survey efforts to consider reopening this HD. For perspective, using a 60% observability rate and considering a total of 10 adult goats were observed on the most recent survey (2018), this would place total adult goats in this HD at 16 goats, much below objective.

Research has shown that most native goat populations can only sustain greater than 3% harvest rates when herds are large (>100 animals). Unlike other ungulates, harvest appears to be largely additive to natural mortality (Hamel et al. 2006). Removing hunter harvest will also be very important in allowing the population to rebound and maintain stability. Therefore, suggest harvest rates for mountain goats are low albeit variable. Gonzalez-Voyer et al. (2000) suggested a herd of 100 could only sustain a harvest of 1 or 2 adult males per year. Cote and Fest-Bianchet, (2001) reported that native mountain goat populations may not sustain a yearly harvest greater than 2%, primarily because kid production is so low and age at first reproduction is late. They suggested that the best management strategy for native populations of goats is to combine a 2-3% annual harvest of a population with a strong encouragement to harvest adult males. Many Jurisdictions do not support hunting mountain goats with less 50 individuals in the population (Alaska, Alberta, British Columbia, Idaho, Oregon, and Washington) (Mountain Goat Management Team, BC, 2010). British Columbia does not hunt mountain goats with a population that is less than an estimated 50 adult goats (Mountain Goat Management Team, 2010). At a minimum this suggests harvest should be avoided on populations less than 50 individuals. Currently, HD 447 estimated population is considerably below 50 individuals.

Table 2. Number of goat licenses, harvest and survey trends HD's 447 and 460, 1971 - Present.

Year	HD 447 Count	Kids/100 Adults	HD 447 Licenses	Total Harvest	HD 460 Count	Kids/100 Adults	HD 460 Licenses	Total Harvest
1971	7^		0	0				
1975	9	50	0	0				
1976	15	36	2	2				
1977	17	70	2	2				
1978			2	2				
1979	20	54	3	3				
1980			3	3				
1981	21	50	3	3				
1982	34	48	3	3				
1983	41	64	3	3				
1984	35	46	4	4				
1985	46	64	4	4				
1986	54	42	9	8				
1987	73		5	5				
1988			10	9				
1989	61	61	15	14				
1990	52	44	15	14				
1991	62	NA	15	15				
1992	74	NA	15	15				
1993	79	41	15	13				
1994	69	35	15	14	14	56	0	
1995	67	29	15	10	21	40	0	
1996	73	30	15	11	33	32	0	
1997	56	60	15	15	42	40	0	
1998	54	42	10	9	32	23	2	2 M

1999	59	64	10	9	45	61	2	1 M
2000	75	33	12	10	No	Survey	2	2
2001	104	NA	15	12 (8M, 4F)	61	30	2	2 (0F)
2002	72	41	15	13 (8M, 5F)	57	30	5	4 (1F)
2003	107	57	15	13 (9M, 4F)	53	36	5	5 (1F)
2004*	103	43	15	14* (6M, 7F / 1M Rnd.)	49	25	5	4 (0F)
2005	92	35	12	11 (4M, 6F / 1M Rnd)	72	41	5	5 (1F)
2006	87	48	10	10 (5M, 4F / 1M Rnd)	43	39	7	7 (1F)
2007**	58	32	10	8** (5M, 3F)	68	31	7	6 (6M, 0F)
2008	61	45	4	4 (3M / 1M Rnd)	62	38	7	6 (5M, 1F)
2009	No	Survey	4	4 (4M)	No	Survey	7	7 (3M, 4F)
2010	56	27	4	4 (3M,1F)	79	25	4	4M
2011	No	Survey	2	2 (1M,1 F)	No	Survey	6	6 M
2012	62	32	2	2 M (1M Rnd)	50	14	6	6 (5 M, 1 F)
2013	35	27	2	2M	43	13	6	8 (6M, 2F)
2014	61	N/A	2	2 (1 M, 1F)	26	15	4	4 (2M, 2F)
2015	44	28	2	3 (1M / 1M, 1F Rnd)	40	7	4	4 (2M, 2F)
2016	52	30	2	3 (2M / 1F – Rnd)	17	31	2	2M
2017	No	Survey	2	1M	No	Survey	2	1M
2018	51	24	1	1M	13	30	1	1M
2019			1	1M			1	0

^ A total of 7 mountain goats (2 males and 5 females) were transplanted to Square Butte in 1971. Also 4 were released in 1943.
* In Jan. 2005, FWP trapped 5 (4 nannies, 1 billy) goats from Square Butte and moved to the Scapegoat Wilderness Area.
** In Jan. 2008, FWP trapped 10 (9 nannies, 1 billy) goats from Round Butte and moved to Ear Mountain.

5. Provide information related to any weather/habitat factors, public or private land use or resident and nonresident hunting opportunity that have relevance to this change (i.e., habitat security, hunter access, vegetation surveys, weather index, snow conditions, and temperature / precipitation information).

Since 2012, there has been at least three above normal winters (snow) coupled with numerous spring snow events. Winter 2017/18 was one of the worst on record in the Great Falls area for both snowfall and cold. Winter 2018/19 snow events in February 2019 received over 45" snow and average temperatures of 0.3 degrees F in Great Falls. Winter mortality could have been realized especially for kids and yearlings. Because the observed population is low, other factors such as habitat changes and predation can become more critical limiting factors. Wolves, mountain lions, golden eagles, black bears, bobcats and coyotes exist throughout the range and may contribute to mortality of adults and young. The USFS initiated a multiyear conifer encroachment reduction effort to improve habitat conditions on ridges in the interior of the Highwoods on USFS lands this past summer.

6. Briefly describe the contacts you have made with individual sportsmen or landowners, public groups or organizations regarding this proposal and indicate their comments (both pro and con).

The proposal has been discussed with area wardens Trenton Farmer, Keith Knighton, Dave Holland, Kqyn Kuka and area USFS biologist David Kemp, all supporting the closure. Area sportsman groups Russell Country Sportsmen, Montana Sportsmen Alliance and Great Falls Chapter Safari Club International all have been approached with the closure, receiving support. There will be some concern with the public with the reduced opportunity until goats rebound.

Submitted by: Cory Loecker, Region 4 Wildlife Manager

Date: 10/5/2019

Approved: _____
Regional Supervisor / Date

Disapproved / Modified by: _____
Name / Date

Reason for Modification:

LITERATURE CITED

Cote, S.D., and M. Festa-Bianchet, 2001. Reproductive success in female mountain goats: the influence of age and social rank. Animal Behaviour 62:173-181.

Gonzalez-Voyer, A., Smith, K., Festa-Bianchet, M. 2000. Dynamics of Hunted and Unhunted Mountain Goat Populations. Biennial Symposium of the Northern Wild Sheep and Goat Council 12:126

Hamel, S., S.D., Cote, K.G. Smith, and M. Festa-Bianchet. 2006. Population dynamics and harvest potential of mountain goat herds in Alberta. The Journal of Wildlife Management 70:1044-1053.

Mountain Goat Management Team. 2010. Management Plan for the Mountain Goat (Oreamnos americanus) in British Columbia. Prepared for the B.C. Ministry of Environment, Vicoria, B.C. 87pp.

MONTANA FISH, WILDLIFE & PARKS
HUNTING SEASON / QUOTA CHANGE SUPPORTING INFORMATION

Species: Mountain Goat
Region: 5
Hunting District: 521
Year: 2020

1. **Describe the proposed season / quotas changes and provide a summary of prior history (i.e., prior history of permits, season types, etc.).**

   Open new hunting district 521 with 4 either sex licenses

   521-20: 4 Licenses
   • Sep 15 – Nov 30 Either-sex

   Establish quota range of 1 to 6 either sex licenses.

   Non-native mountain goats have expanded both in numbers and distribution along the Boulder/Stillwater divide in recent years. This expansion has resulted in increased goat numbers in the Flood Creek/Two Sisters/Tumble Mountain areas of the western Beartooth Mountains. This area is currently not included in any mountain goat hunting district. The expansion of goats offers the opportunity to provide additional hunter opportunity by opening a new hunting district for goat harvest. The Flood Creek/Two Sisters/Tumble Mountain area also is the primary spring lambing/nursery area and summer range for the bighorn sheep that winter at low elevation south of Nye, MT. Recent research from Montana State University has suggested the potential for conflict between expanding mountain goat populations and native bighorn populations, including potential for forage competition, social conflict or disease transmission. Minimizing the rate of increase of mountain goats through hunter harvest will reduce the potential for these conflicts to develop.

2. **Why is the proposed change necessary?**

The proposal will bring increased goat hunter opportunity to Region 5. The proposal should also result in a lower rate of increase for non-native mountain goats that are expanding into critical spring lambing and summer range for native bighorns.

3. What is the objective of this proposed change? This could be a specific harvest amount or resulting population level or number of game damage complaints, etc.

The objective is to harvest a minimum of two mountain goats/year.

4. How will the success of this proposal be measured? This could be annual game or harvest surveys, game damage complaints, etc.

Harvest will be monitored through the statewide hunter questionnaire survey. Monitoring goat numbers will largely depend on hunter reports.

5. **What is the current population's status in relation to the management objectives? (i.e., state management objectives from management plan if applicable; provide current and prior years of population survey, harvest, or other pertinent information).**

The Flood Creek/Two Sisters/Tumble Mountain area is outside of the hunting districts typically surveyed in Regions 3 and 5. However, several dedicated bighorn hunters have supplied counts of goats in this area over the last couple of years. In 2018 these hunters counted a minimum of 33 goats. These same hunters tallied a minimum of 38 goats in 2019 and noted increasing numbers of goats on the northern end of the area. The objective would be to stabilize the goat herd at no more than 35 countable goats.

6. **How will this proposal influence this population status?**

The proposal would hopefully result in stabilizing the goat herd at no more than 35 countable goats.

7. Provide information related to any weather/habitat factors that have relevance to this change (i.e., habitat security, hunter access, vegetation surveys, weather index, snow conditions, and temperature / precipitation information).

1) Utilization transect information: None

2) Snow condition survey information:
The winters of 2017-18 and 2018-19 were severe. However, goat numbers remained stable or increased slightly.

3) Describe access problems related to change, etc.
Access will remain stable since the entire HD is located on USFS lands with good trail access.

4) Overwinter survival information (i.e. bad winter lost what % of population)
Despite severe winters in recent years goat numbers remained stable or increased slightly.

8. Provide information relative to impacts to resident hunters, nonresident hunters and public & private land use.

Briefly describe the contacts you have made with individual sportsmen or landowners, public groups or organizations regarding this proposal and indicate their comments (both pro and con).

1) List specific sports groups or landowners:
The Rocky Mountain Goat Alliance has been contacted regarding the potential for a hunting season in this area.
2) Indicate if proposal was recommended by public - is it in response to a concern by sportspersons:

This proposal is largely the result of communications with bighorn hunters that spend time in Bighorn HD 500.

Submitted by: Shawn T. Stewart

Date: October 10, 2019

Approved: _____
Regional Supervisor / Date

Disapproved / Modified by: _____
Name / Date

Reason for Modification: